Subject : Confidence and Frequency response

NASE786X-09-01

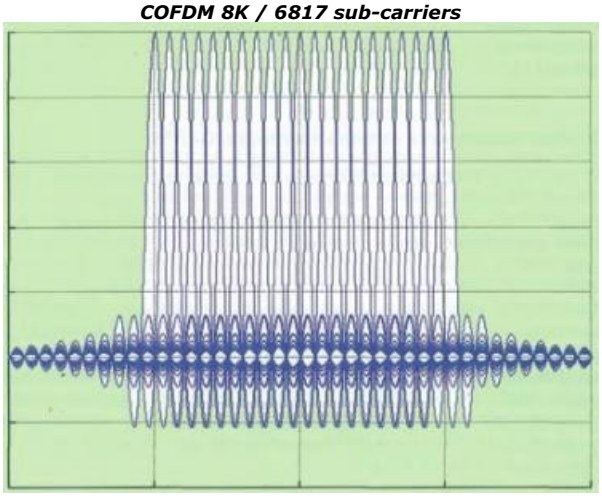
SEFRAM 7865-7866-7865HD-7866HD field strength meters allow operating confidence and frequency response measurements on a precise multiplex. What is it about ? How to use it ? And how to understand the results ?

Definition

The confidence and frequency response measurements operate on the digital signals broadcast by the DTV (DVB-T).

COFDM : The digital signals are carried by using the COFDM modulation. It divides the information in multiple sub-carriers. The information is redundant, several sub-carriers are made up of the same data.

COFDM 8K / 6817 sub-carriers



Confidence : It is a MER measure (in %) that allows estimating the confidence that can be attached to a sub-carrier (of the COFDM). If this measure is too low, the DTV tuner rejects this sub-carrier and process the information elsewhere (redundancy).

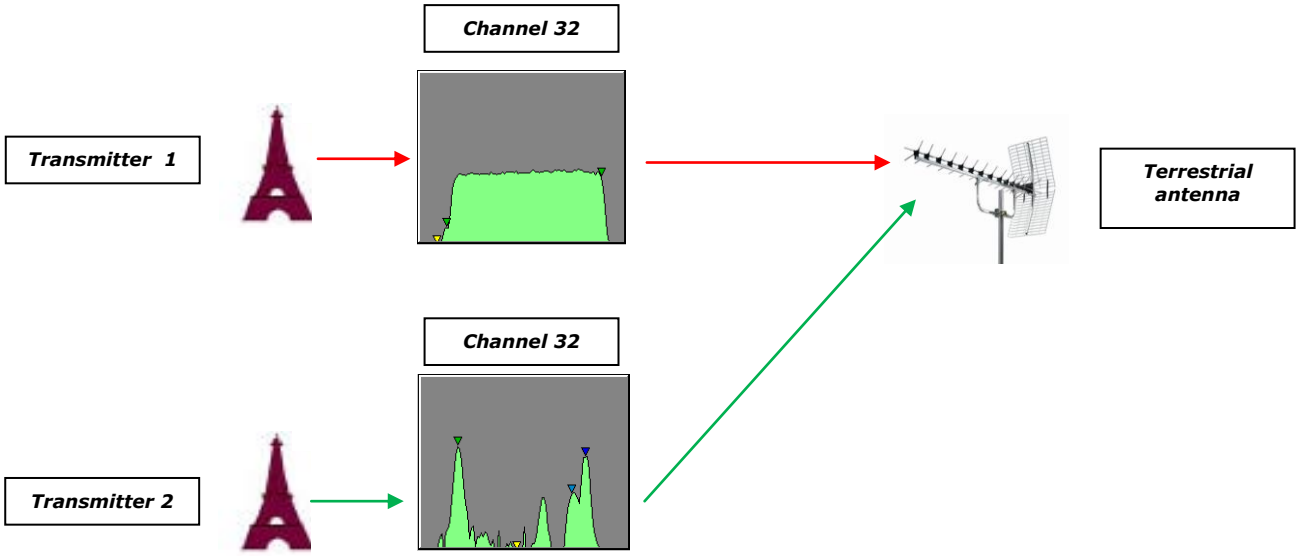
Frequency response : Allows seeing the level attenuations in the multiplex bandwidth.

When to use it ?

Confidence measure :

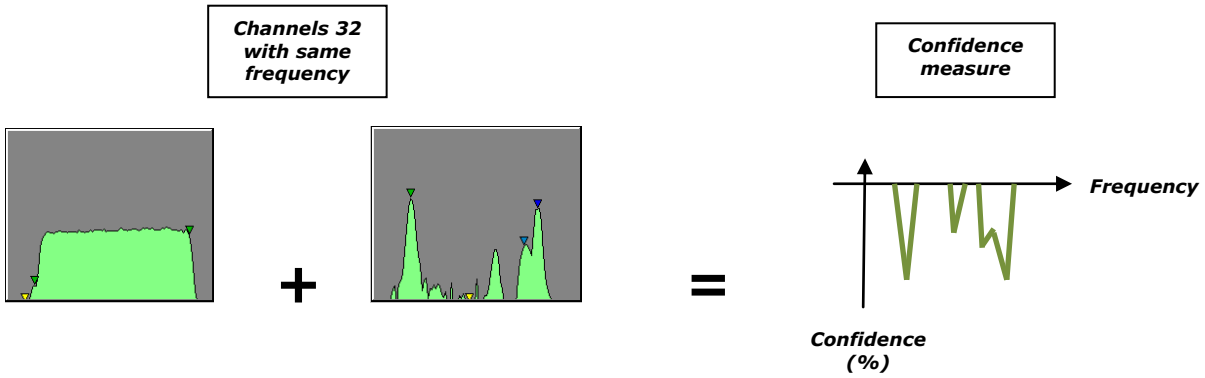
As an example, here is an application in which the confidence measure is necessary to correct the installation. In this situation, the antenna is pointed at the transmitter 1 that broadcasts a digital signal on the Channel 32. The transmitter 2 sends an analog signal on the same channel.

Application for confidence measure



Geographically, these three elements are configured in such a way that the antenna receives the two signals at a time. As the antenna is setup to align the transmitter 1, the transmitter 2 signal is weakened and then invisible with the spectrum analyser (it becomes confused in the transmitter 1 signal). Nevertheless, the signal received by the transmitter 1 is damaged (no TV picture). This defect type can be detected with the field strength meter thanks to the confidence measurement.

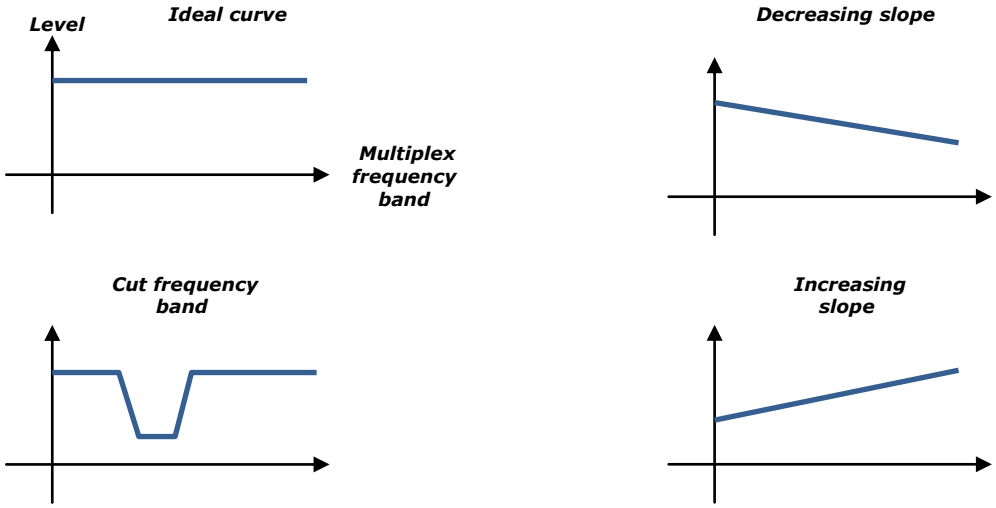
Metrix Electronics Limited
Minchens Court, Minchens Lane, Bramley, RG26 5BH, U.K.
Tel: +44 (0)845 034 3234, Fax: +44 (0)845 034 3233
E-mail: sales@metrix-electronics.com, Web: www.metrix-electronics.com



To correct this defect : - Readjust the antenna so as not to receive the transmitter 2 signal anymore.
- Install a more directional antenna.

Frequency response :

The frequency response allows seeing the multiplex spectrum in a precise way. Ideally, the curve has to be as horizontal as possible. If the signal is interfered, the frequency response curve deteriorates. It is possible to determine the defect type according to the appearance of the frequency response curve given by the field strength meter. Below, few examples :



Defect types :

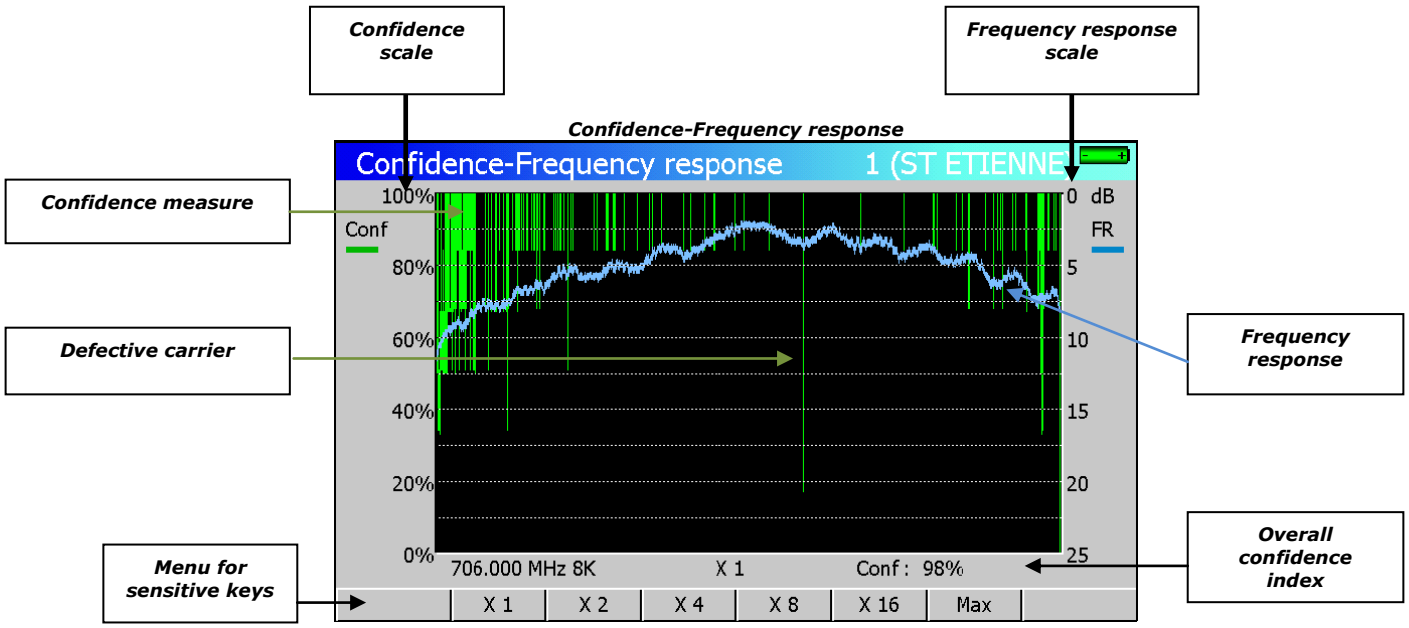
- Decreasing slope : bad transmission of high frequencies (defective cables).

- Cut frequency band : presence of a filtering element in the channel (bad filter adjustment in the domestic installation).

- Increasing slope : bad transmission of the low frequencies (the antenna is not calibrated properly

<u>With the field strength meter</u>

- Select a multiplex and press 3 times the "Constellation" key : 3X  ***. The following window appears.***



The confidence measure of each carrier is displayed in green. You can see their value in the left axis. An overall confidence index is written at the screen bottom. In this case, the signal is correct, few carriers have been destroyed during the information transport. The frequency response measure appears in blue. On the right axis, you can see the attenuation of each frequency (compared with the highest carriers).

The sensitive keys under the screen allow changing the number of carriers used for display :

X 1 : maximum quality, all carriers are used ;
X 2 : one carrier out of two ;
X 4 : one carrier out of four ;
X 8 : one carrier out of eight ;
X 16 : one carrier out of sixteen ;
Max : maximum speed, measure on 240 carriers only.

Product link : ***http://www.sefram.com/wwwFR/F_quick_search.asp?st=7865***